ENGINEERS
AUSTRALIA

Canberra Division

THE
ENGINEERING HERITAGE
RECOGNITION PROGRAM

NOMINATION OF

CANBERRA'S MAIN OUTFALL SEWER

FOR THE AWARD OF AN

ENGINEERING HERITAGE MARKER

BY

ENGINEERING HERITAGE CAMBERRA
December 2009

The Administrator
Engineering Heritage Australia
Engineers Australia
Engineering House
11 National Circuit
BARTON ACT 2600

Nomination for an Engineering Heritage Marker Award
under the
Engineering Heritage Recognition Program

Name of work Canberra's Main Outfall Sewer

This work is nominated for the award: Engineering Heritage Marker.

Location In the Australian Capital Territory (ACT),
Commences (Manhole No 45), District of Canberra, Division of Parkes, Section 24
Ventilator Shaft No 1, Stirling Ridge, Division of Yarralumla, Block 4, Section 22
Crossing at Yarralumla Creek, Rural Block 1163 WCD
Ventilator Shaft No 2. Westbourne Woods, Division of Yarralumla, Block 2, Section 119
Ventilator Shaft No 3, Weston Creek, Division of Weston, Block 2, Section 83
Ends (Manhole No 1) near former Treatment Works, Rural Block 1181 WCD.
See Attachment A.

Owner ACTEW Corporation.
PO Box 366
CANBERRA ACT 2601.
The owner has been advised of this nomination, a copy of the letter of agreement is at Attachment A.

Access to site The line of the outfall sewer is accessible over much of its 7.9 kms (5 miles) as much of it lies on public land. Where the sewer lies under private property such as the Royal Canberra Golf Club, access can normally be gained by obtaining the permission of the property owner.

Nominating body Engineering Heritage Canberra.
Canberra Division, Engineers Australia
Engineering house
11 National Circuit
BARTON ACT 2600.

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Secretary
Engineering Heritage Canberra
December 2009

.....
Chair
Engineering Heritage Canberra
December 2009

Heritage Assessment

1. BASIC DATA

Item Name

Canberra's Main Outfall Sewer.

Other/Former Names

Nil.

Location

In the Australian Capital Territory (ACT).
Commences (Manhole No 45), District of Canberra, Division of Parkes, Section 24, Ventilator Shaft No 1, Stirling Ridge, Division of Yarralumla, Block 4, Section 22, crossing Yarralumla Creek, Rural Block 1165 WCD, Ventilator Shaft No 2, Westbourne Woods, Division of Yarralumla, Block 2, Section 119, Ventilator Shaft No 3, Weston Creek, Division of Weston, Block, Section 83, ends (Manhole No 1), near former treatment Works, Rural Block 1181 WCD.
See Attachment B, Page 114 for an early map showing the route of the sewer.

Address

Not Applicable.

Suburb/Nearest Town

Located in the Canberra suburbs of Parkes, Yarralumla and Weston Creek.

State/Territory

Australian Capital Territory.

Local Government Area

The Government of the ACT.

Owner

ACTEW Corporation.

Current Use

Sewer main.

Former Use

Sewer main.

Designer

As described at Attachment A, a number of people and organisations were involved in the design of the main Outfall Sewer. Colonel F F Longley had a major influence on the type and location of the sewerage treatment works with Thomas Hill proposing various alternatives. Finally, Ernest de Burgh moved during a Federal Capital Advisory Committee meeting on 28 January 1924 that the Western Creek (now Weston Creek) location for the treatment works be settled and this was accepted.

As to the Main Outfall Sewer itself, Thomas Hill had responsibility for the overall design while Henry Connell carried out the detailed design for the Department of Home Affairs. It was based on similar works existing in Sydney and Melbourne.

Maker/Builder

Department of Home Affairs.

Year Started: 1915 **Year Completed:** 1926

Physical Description

The Sewer is an egg shaped concrete lined tunnel 1.68 metres high by 1.12 metres wide (5ft 6in X 3ft 8in). It runs underground about 7 km (5 miles) from Commonwealth Avenue near the Hyatt Hotel to the site of the former sewerage treatment works at Weston Creek where it is now connected to the Molonglo Interceptor which carries sewage to the Lower Molonglo Water Quality Control Centre – see Attachment B page 121. It crosses the Yarralumla Creek near the Yarralumla Woolshed (see title page picture). There are three ventilator shafts along its length topped by ornate brick chimneys – see diagram and photographs in Attachment D.

Modifications and Dates

The Main Outfall Sewer is largely unchanged since 1926. It has had manhole tops rebuilt in the 1980s and supplementary ventilators added to some manholes following a report in 1987. The main change regarding the tunnel itself is the connection to it of further main sewers such as the Woden Trunk Sewer which now connects into it at Manhole 15, north of Curtin. It also accepts sewage from the North West intercepting sewer which passes through an inverted siphon from Acton Peninsula, and feeds in at a junction at manhole 42.

The main outfall sewer still accepts sewage from the north and south main sewers at Commonwealth Avenue. The main from Civic no longer runs through an inverted siphon under the river (now Lake Burley Griffin), but through pipes built into the structure of Commonwealth Avenue bridge, with one of the towers forming a vent.

Originally completed in 1926, the sewer has remained substantially unchanged although extensions have progressively expanded the system to cater for 120,000 people in the 1970s when the Western Creek treatment works were closed down having been superceded by the Lower Molonglo Water Quality Control Centre.

Historical Notes

The need for the national capital to have a modern sewerage system was acknowledged from the very first. On 20 May 1909 the Premier of NSW wrote "I note hitherto no reports have been obtained on the matter of sewerage of the capital city", enclosing a copy of the *Report of the Chief Engineer for Sewerage Construction 12 May 1909* which said:

> *Two alternative sites have been selected for the Federal Capital City in the Yass-Canberra area ... the alternative sites are known as Canberra and Mugga Mugga..... The Canberra site undoubtedly presents the better facilities for the treatment of sewage.*

Construction of the sewer commenced in 1915 but was stopped in 1917 due to World War I. After further Parliamentary approval, excavation recommenced in 1922 and the system was completed in 1926 to be in operation in conjunction with the treatment works before the opening of Parliament House in 1927. Many of the workers were returned soldiers from the War.

Heritage Listings

Several years ago a draft citation was drafted for the Main Outfall Sewer and submitted to the ACT Heritage Council for consideration for listing the works on the Interim Heritage Places Register. The matter did not progress to conclusion and the documentation was recently updated with the intention that it be resubmitted. This nomination draws heavily on that documentation.

The three brick ventilator chimneys are individually entered on the Register of the National Estate: Legal Status Registered 29 May 1996, Database No 019111-3, File No 8/01/000/0428-30. The three vents were classified by the National Trust of Australia (ACT) as a group on 1 October 1992.

2. ASSESSMENT OF SIGNIFICANCE

Historic Phase

As the Main Outfall Sewer was constructed during the years 1915 to 1926 albeit with a break between 1917 and 1922, it falls into the early development historic phase of the establishment of Canberra as the nation's capital.

Historic Individuals or Association

L A Wade, Chief Engineer (Irrigation and Drainage), Department of Public Works,

NSW
Charles Scrivener, District Surveyor, Department of Home Affairs
Thomas Hill, Chief Engineer (Sewerage and Water Supply), Department of Home Affairs
Walter Burley Griffin, Australian National Capital design winner.
Henry Connell, successor to Thomas Hill.
Colonel Percy Owen, Director-General of Works, 1904 – 1924, then Chief Engineer, Federal Capital Commission (FCC).
Ernest de Burgh, Chief Engineer for Water Supply and Sewerage, Department of Works, NSW.
Colonel F F Longley, International Health Board, Rockefeller Foundation.
James Brilliant, Clerk of Works.
William Brownless, Engineer of Water Supply and Sewerage, Federal Capital Commission.
Sir John Butters, first Commissioner of the FCC.

Creative or Technical Achievements

The design of the main outfall sewer was not new or a significant departure from the technology of its time, since egg shaped gravity mains existed in Melbourne and Sydney at the time of its design. Yet it represents a high degree of technical achievement in that it was designed 10 years before the technology to be used at the treatment works was decided. It provided gravity feed for the entire city that could be foreseen at the time and avoided the possibility of pollution of the ornamental lakes on the Molonglo River. It continues to function more than 80 years later in a city that is sixty times larger than when it began operating and nearly three times larger than its intended ultimate capacity.

Research Potential

There is some potential for archaeological research in the vicinity of the tunnel and at the former worker camp sites.

Social

The outfall sewer has had and continues to have significant social impact in that it makes an important contribution to the health of the citizens of Canberra by efficient removal of sewage and prevention of pollution to the city's waterways. The teams of workers used in its construction formed a significant part of the embryonic population of Canberra.

The establishment of the Department of Defence's Joint Services Staff College in close proximity to the Weston Creek Sewerage Treatment Works in 1970 led to the establishment being affectionately known to its staff and students as "The Shit Farm".

Rarity

Canberra's Main Outfall Sewer is unique i.e. it is the only one. However, the style and method of construction was commonly used at the time.

Representativeness

The egg-shaped sewer tunnel, gravity feeding sewage to treatment works, is typical of the sewer systems of the early 20th Century and reflects designs used in the Melbourne and Sydney systems.

Integrity/Intactness

The integrity of the Main Outfall Sewer is high with only minor changes having been made since completion in 1926. The system remains in service.

References

Draft nomination documentation for placement of the works on the Australian Capital Territory Interim Heritage Places Register – see Attachment C.

Statement of Significance

The main Outfall Sewer is a significant component of the original engineering infrastructure associated with the development of Canberra as the national capital, allowing healthy conditions to be retained as the population expanded with the transfer of functions to Canberra in the 1920s. It was a central feature that allowed the construction of national buildings and the transfer of Parliament in 1927, and it remains in service fulfilling its original function more than 80 years later. Three original and unusual brick ventilator shafts provide visual indication of the line of the underground sewer. The design of the Main Outfall Sewer with its implications for sewerage treatment was far sighted at the time but was subject to considerable controversy and delay which characterised the early construction of Canberra, and the tension between Walter Burley Griffin and the Department of Home Affairs.

Assessed Significance

Although the works formed part of the establishment of Australia's national capital, their primary historic significance is state (territory) and local in nature. Accordingly, it warrants nomination for an **Engineering Heritage Marker** award rather than an Engineering Heritage National Landmark.

Images with captions

See Attachment D.

Interpretation Panel

The form and text of the Interpretation panel will depend on the location of the plaque and panel which has still to be decided. Several panel texts were drafted earlier when it was thought there may be a number of panels along the sewer's route – a sample appears at Attachment E.

Attachments:

A. ACTEW letter dated March 2009.

B. Extract form “Canberra’s Engineering Heritage”, Second Edition 1990, Pages 114 to 121.

C. Draft Citation prepared for the consideration of the ACT Heritage Council, dated 6 December 2009.

D. Photos and Diagrams with Captions.

E. Sample Text for an Interpretation Panel.

Acknowledgments.

This nomination is based on the two documents listed above as Attachments B and C. The authors of the chapter from which Attachment B was extracted were Kenneth J Dalgarno BE, FIEAust, LGE(NSW), HE(Tas), and A E Minty BE, FIEAust, FCIT. The author of the document at Attachment C is K M Baker BE(Elec), MIEAust, FRMIT(Management), MApSc(Cultural Heritage Management).

The author of this document was Rob Breen who acknowledges the contributions of these engineers without whose documents the drafting of this submission would have been far more difficult than it was.